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August 1, 2007

VIA FACSIMILE

Mail Stop 16

Director of the US Patent and Trademark Office

PO Box 1450

Alexandria, VA 22313-1450

Re: Request for Refund
Patent Application No.: 10/672,700
Filing Date: September 25, 2003
Deposit Account No.: 50-0553

Dear Sirs:

We request a refund in the amount of \$6,300.00 which was charged to Deposit Account No. 50-0553 on July 24, 2007 for excess claims fees for the above patent application.

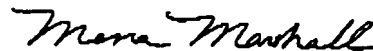
An amendment was filed on July 19, 2007 for the above application. The number of claims in the amendment is the same as the number as filed. None of the claims in the amendment are indicated "new" so there can be no additional claims fees. Accordingly, the \$6,300.00 charge on July 24, 2007 for excess claims fees is in error and we request that this amount be refunded to the above deposit account.

This request is supported by the following:

- 1) a true copy of the Filing Receipt indicating 63 total claims and 21 independent claims as filed (2 pages);
- 2) a true copy of the Transmittal Letter for the amendment filed on July 19, 2007 with the USPTO date stamp of July 23, 2007 (2 pages); and
- 3) a true copy of the claims submitted in the amendment filed on July 19, 2007 indicating 63 total claims and 21 independent claims (14 pages).

The Director is authorized to credit the refund amount to Deposit Account No. 50-0553. Thank you for your attention to this matter.

Very truly yours,



Mona Marshall
Paralegal

/mm
Enclosures



UNITED STATES PATENT AND TRADEMARK OFFICE

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APPL NO.	FILING OR 371 (2) DATE	ART UNIT	FILE FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/672,700	09/25/2003	2122	3038	SUN-040023	39	83	21

CONFIRMATION NO. 9228

David B. Ritchie
Thelen Reid & Priest, LLP
P.O. Box 840640
San Jose, CA 95184-0840

FILING RECEIPT

OC000000011535072

Date Mailed: 12/19/2003

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-748-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

Applicant(s)

Eduard K. de Jong, Bristol, UNITED KINGDOM;

Assignment For Published Patent Application

Sun Microsystems, Inc., a Delaware Corporation;

Domestic Priority data as claimed by applicant

Foreign Applications

If Required, Foreign Filing License Granted: 12/18/2003

Projected Publication Date: 03/31/2005

Non-Publication Request: No

Early Publication Request: No

Title

Permutation of opcode values for application program obfuscation

Preliminary Class

COPY

717

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

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July 19, 2007

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
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TRANSMITTAL LETTER

RE: Applicant(s): Eduard K. de Jong
Assignee: Sun Microsystems, Inc..
Title: PERMUTATION OF OPCODE VALUES FOR
APPLICATION PROGRAM OBFUSCATION
Serial No.: 10/672,700
Filing Date: September 25, 2003
Examiner: April Ying Shan
Group Art Unit: 2135
Docket No.: SUN040023

Dear Sir:

Transmitted herewith are the following documents for the response to the Office Action dated April 20, 2007 in the above application:

1. Return receipt postcard;
2. This Transmittal Letter (2 pages); and
3. Amendment (47 pages, including 3 replacement sheets of drawings).

No additional claims fees are required.

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COPY

GUNNISON, MCKAY & HODGSON, L.L.P.

Transmittal Letter
Serial No. 10/672,700
July 19, 2007

CLAIMS AS AMENDED

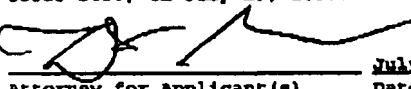
	Claims Remaining after Amendment	Highest No. Previously Paid For	Present Extra	Rate	Additional Fee
Total Claims	63	- 21	= 42	x \$50.00	\$2,100.00
Independent Claims	63	- 21	= 42	x \$200.00	\$8,400.00
First filing of Multiple Dependent Claim (Enter \$290)					0.00
Total of above Calculation					\$10,500.00
Reduction by 50% for filing by Small Entity (Enter 0.8 for small entity)					1.0
Subtotal					\$10,500.00
TOTAL					\$ 0.00

☒ Conditional Petition for Extension of Time: If an extension of time is required for timely filing of the enclosed documents after all papers filed with this transmittal have been considered, Applicant(s) hereby petition for such an extension of time.

☒ The Commissioner is hereby authorized to charge any additional fees required for consideration of the enclosed documents, and to credit any overpayment of fees to Deposit Account No. 50-0553.

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 19, 2007.


Attorney for Applicant(s)

July 19, 2007
Date of Signature

Respectfully submitted,



Forrest Gunnison
Attorney for Applicant(s)
Reg. No. 32,899

COPY

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Amdt. dated July 19, 2007
Reply to Office Action of April 20, 2007

This listing of claims replaces all prior versions, and listings of claims in the instant application:

Listing of Claims:

1. (Original) A method for executing an obfuscated application program, the method comprising:
receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes;
determining a dispatch table associated with said application program, said dispatch table corresponding to said one of a plurality of instruction set opcode value encoding schemes; and
executing said application program using said associated dispatch table.
2. (Original) The method of claim 1 wherein said determining comprises generating said dispatch table in response to said receiving.
3. (Original) The method of claim 1 wherein said determining comprises selecting a dispatch table from a plurality of dispatch tables in response to said receiving, said plurality of dispatch tables stored in a memory.
4. (Original) A method for executing an obfuscated application program, the method comprising:
receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of non-standard instruction set opcode value encoding schemes;

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determining an instruction set opcode value encoding scheme associated with said obfuscated application program;

rewriting said application program using a standard opcode value encoding scheme if said received application program is not encoded using said standard opcode value encoding scheme; and

executing said application program using a dispatch table associated with said standard opcode value encoding scheme.

5. (Original) A method for application program obfuscation, the method comprising:

reading an application program comprising code;

transforming said application program code into transformed application program code that uses one of a plurality of opcode value encoding schemes of a dispatch table associated with said application program; and

sending said transformed application program code.

6. (Original) The method of claim 5, further comprising receiving an application program request from a user device, said transforming occurring in response to said receiving.

7. (Original) The method of claim 5 wherein said method further comprises, after said creating, applying a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and

said sending comprises sending said encrypted obfuscated application program.

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8. (Withdrawn) A method for creating an opcode value encoding scheme for an instruction set, the method comprising:

creating a series of numbers using a randomized process;
filtering said series to remove duplicate numbers;
and
creating a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

9. (Withdrawn) A method for creating an opcode value encoding scheme for an instruction set, the method comprising:

selecting a seed and a cryptographic key;
creating a series of numbers based at least in part on said seed and said cryptographic key, said seed having a size that is less than the size of said series;
filtering said series to remove duplicate numbers;
and
creating a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

10. (Withdrawn) The method of claim 9 wherein said creating comprises using a loop back hash function to create said series.

11. (Withdrawn) The method of claim 10 wherein said loop back hash function comprises the MD4 algorithm.

12. (Withdrawn) The method of claim 10 wherein said loop back hash function comprises the MD5 algorithm.

13. (Withdrawn) The method of claim 10 wherein said loop back hash function comprises the SHA-1 algorithm.

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14. (Withdrawn) The method of claim 10 wherein said key is based at least in part on a target ID.

15. (Withdrawn) The method of claim 14 wherein said target ID comprises a VM ID.

16. (Original) A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for executing an obfuscated application program, the method comprising:

receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes;

determining a dispatch table associated with said application program, said dispatch table corresponding to said one of a plurality of instruction set opcode value encoding schemes; and

executing said application program using said associated dispatch table.

17. (Original) The program storage device of claim 16 wherein said determining comprises generating said dispatch table in response to said receiving.

18. (Original) The program storage device of claim 16 wherein said determining comprises selecting a dispatch table from a plurality of dispatch tables in response to said receiving, said plurality of dispatch tables stored in a memory.

19. (Original) A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for executing an obfuscated application program, the method comprising:

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receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of non-standard instruction set opcode value encoding schemes;

determining an instruction set opcode value encoding scheme associated with said obfuscated application program;

rewriting said application program using a standard opcode value encoding scheme if said received application program is not encoded using said standard opcode value encoding scheme; and

executing said application program using a dispatch table associated with said standard opcode value encoding scheme.

20. (Original) A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for application program obfuscation, the method comprising:

reading an application program comprising code;
transforming said application program code into transformed application program code that uses one of a plurality of opcode value encoding schemes of a dispatch table associated with said application program; and

sending said transformed application program code.

21. (Original) The program storage device of claim 20, the method further comprising receiving an application program request from a user device, said transforming occurring in response to said receiving.

22. (Original) The program storage device of claim 20 wherein

said method further comprises, after said creating, applying a cryptographic process to said

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obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program; and
said sending comprises sending said encrypted obfuscated application program.

23. (Withdrawn) A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for creating an opcode value encoding scheme for an instruction set, the method comprising:

creating a series of numbers using a randomized process;
filtering said series to remove duplicate numbers;
and
creating a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

24. (Withdrawn) A program storage device readable by a machine, embodying a program of instructions executable by the machine to perform a method for creating an opcode value encoding scheme for an instruction set, the method comprising:

selecting a seed and a cryptographic key;
creating a series of numbers based at least in part on said seed and said cryptographic key, said seed having a size that is less than the size of said series;
filtering said series to remove duplicate numbers;
and
creating a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

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25. (Withdrawn) The program storage device of claim 24 wherein said creating comprises using a loop back hash function to create said series.

26. (Withdrawn) The program storage device of claim 25 wherein said loop back hash function comprises the MD4 algorithm.

27. (Withdrawn) The program storage device of claim 25 wherein said loop back hash function comprises the MD5 algorithm.

28. (Withdrawn) The program storage device of claim 25 wherein said loop back hash function comprises the SHA-1 algorithm.

29. (Withdrawn) The program storage device of claim 25 wherein said key is based at least in part on a target ID.

30. (Withdrawn) The program storage device of claim 29 wherein said target ID comprises a VM ID.

31. (Currently Amended) An apparatus for executing an obfuscated application program, the apparatus comprising:

a processor; and

a memory, coupled to said processor, having stored therein computer readable instructions wherein executing said computer readable instructions on said processor provides:

means for receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes;

means for determining a dispatch table associated with said application program, said

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dispatch table corresponding to said one of a plurality of instruction set opcode value encoding schemes; and

means for executing said application program using said associated dispatch table.

32. (Original) The apparatus of claim 31 wherein said means for determining comprises means for generating said dispatch table in response to said receiving.

33. (Original) The apparatus of claim 31 wherein said means for determining comprises means for selecting a dispatch table from a plurality of dispatch tables in response to said receiving, said plurality of dispatch tables stored in a memory.

34. (Currently Amended) An apparatus for executing an obfuscated application program, the apparatus comprising:
a processor; and
a memory, coupled to said processor, having stored therein computer readable instructions wherein
executing said computer readable instructions on said processor provides:

means for receiving an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of non-standard instruction set opcode value encoding schemes;

means for determining an instruction set opcode value encoding scheme associated with said obfuscated application program;

means for rewriting said application program using a standard opcode value encoding scheme if said received application program is not encoded using said standard opcode value encoding scheme; and

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means for executing said application program using a dispatch table associated with said standard opcode value encoding scheme.

35. (Currently Amended) An apparatus for application program obfuscation, the apparatus comprising:

a processor; and
a memory, coupled to said processor, having stored therein computer readable instructions wherein executing said computer readable instructions on said processor provides:

means for reading an application program comprising code;

means for transforming said application program code into transformed application program code that uses one of a plurality of opcode value encoding schemes of a dispatch table associated with said application program; and

means for sending said transformed application program code.

36. (Original) The apparatus of claim 35, further comprising means for receiving an application program request from a user device, said transforming occurring in response to said receiving.

37. (Original) The apparatus of claim 35 wherein said apparatus further comprises means for applying a cryptographic process to said obfuscated application program together with a cryptographic key to create an encrypted obfuscated application program after said creating; and

said means for sending comprises means for sending said encrypted obfuscated application program.

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38. (Withdrawn) An apparatus for creating an opcode value encoding scheme for an instruction set, the apparatus comprising:

means for creating a series of numbers using a randomized process;

means for filtering said series to remove duplicate numbers; and

means for creating a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

39. (Withdrawn) An apparatus for creating an opcode value encoding scheme for an instruction set, the apparatus comprising:

means for selecting a seed and a cryptographic key;

means for creating a series of numbers based at least in part on said seed and said cryptographic key, said seed having a size that is less than the size of said series;

means for filtering said series to remove duplicate numbers; and

means for creating a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

40. (Withdrawn) The apparatus of claim 39 wherein said means for creating comprises means for using a loop back hash function to create said series.

41. (Withdrawn) The apparatus of claim 40 wherein said loop back hash function comprises the MD4 algorithm.

42. (Withdrawn) The apparatus of claim 40 wherein said loop back hash function comprises the MD5 algorithm.

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43. (Withdrawn) The apparatus of claim 40 wherein said loop back hash function comprises the SHA-1 algorithm.

44. (Withdrawn) The apparatus of claim 40 wherein said key is based at least in part on a target ID.

45. (Withdrawn) The apparatus of claim 44 wherein said target ID comprises a VM ID.

46. (Original) An apparatus for executing an obfuscated application program, the apparatus comprising a user device configured to:

receive an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes;

determine a dispatch table associated with said application program, said dispatch table corresponding to said one of a plurality of instruction set opcode value encoding schemes; and

execute said application program using said associated dispatch table.

47. (Original) The apparatus of claim 46 wherein said user device is further configured to generate said dispatch table in response to said receiving.

48. (Original) The apparatus of claim 46 wherein user device is further configured to select a dispatch table from a plurality of dispatch tables in response to said receiving, said plurality of dispatch tables stored in a memory.

49. (Original) An apparatus for executing an obfuscated application program, the apparatus comprising a user device configured to:

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receive an obfuscated application program, said obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of non-standard instruction set opcode value encoding schemes;

determine an instruction set opcode value encoding scheme associated with said obfuscated application program;

rewrite said application program using a standard opcode value encoding scheme if said received application program is not encoded using said standard opcode value encoding scheme; and

execute said application program using a dispatch table associated with said standard opcode value encoding scheme.

50. (Original) An apparatus for application program obfuscation, the apparatus comprising an application program provider configured to:

... read an application program comprising code;
transform said application program code into transformed application program code that uses one of a plurality of opcode value encoding schemes of a dispatch table associated with said application program; and

send said transformed application program code.

51. (Original) The apparatus of claim 50, said application program provider further configured to receive an application program request from a user device, said transforming responsive to said receiving.

52. (Original) The apparatus of claim 50 wherein said application program provider is further configured to apply a cryptographic process to said obfuscated application program together with a

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cryptographic key to create an encrypted obfuscated application program after said creating; and
said application program provider is further configured to send said encrypted obfuscated application program.

53. (Withdrawn) An apparatus for creating an opcode value encoding scheme for an instruction set, the apparatus comprising an application program provider configured to:
create a series of numbers using a randomized process;
filter said series to remove duplicate numbers;
and
create a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

54. (Withdrawn) An apparatus for creating an opcode value encoding scheme for an instruction set, the apparatus comprising an application program provider configured to:
select a seed and a cryptographic key;
create a series of numbers based at least in part on said seed and said cryptographic key, said seed having a size that is less than the size of said series;
filter said series to remove duplicate numbers;
and
create a one-to-one mapping between instruction implementation methods in an instruction set and said numbers.

55. (Withdrawn) The apparatus of claim 54 wherein said application program provider is configured to use a loop back hash function to create said series.

56. (Withdrawn) The apparatus of claim 55 wherein said loop back hash function comprises the MD4 algorithm.

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57. (Withdrawn) The apparatus of claim 55 wherein said loop back hash function comprises the MD5 algorithm.

58. (Withdrawn) The apparatus of claim 55 wherein said loop back hash function comprises the SHA-1 algorithm.

59. (Withdrawn) The apparatus of claim 55 wherein said key is based at least in part on a target ID.

60. (Withdrawn) The apparatus of claim 59 wherein said target ID comprises a VM ID.

61. (Withdrawn) A memory for storing data for access by an application program being executed on a data processing system, comprising:

a data structure stored in said memory, said data structure including information used by said application program execute an obfuscated application program, said data structure an obfuscated application program comprising at least one instruction opcode value encoded using one of a plurality of instruction set opcode value encoding schemes.

62. (Withdrawn) The memory of claim 61 wherein said data structure further comprises a cryptographic key and protected data, said protected data encrypted using said cryptographic key.

63. (Withdrawn) The memory of claim 61 wherein said data structure further comprises an obfuscation descriptor that indicates an obfuscation method used to create said obfuscated application program.

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FACSIMILE TRANSMISSION

To: Mail Stop 16
Director of the USPTO

From: Mona Marshall

Tel.: 571-272-6500

Total no. of pages: 20 (Including this page)

Fax: 571-273-6500

Date: August 1, 2007

Re: Refund Request

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office, Fax No. 571-273-6500, on August 1, 2007.

Mona Marshall
Mona Marshall

August 1, 2007
Date of Signature

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Eduard K. de Jong
Assignee: Sun Microsystems, Inc.
Title: PERMUTATION OF OPCODE VALUES FOR APPLICATION
PROGRAM OBFUSCATION
Serial No.: 10/672,700 Filed: September 25, 2003
Examiner: April Ying Shan Group Art Unit: 2135
Docket No.: SUN040023

Monterey, CA
July 19, 2007

Mail Stop Amendment
Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

Dear Sir:

In response to the Office Action dated April 20, 2007,
please amend the above-identified application as follows:

1. Amendments to the Specification begin on
page 2 of this paper;
2. Amendments to the Claims are reflected in the
listing of Claims which begins on page 15 of this
paper;
3. Amendments to the Drawings begin on page 29
of this paper and include three (3) attached
replacement sheets; and
4. Remarks begin on page 30 of this paper.

07/24/2007 SLUAH 61 00000018 500553 10672700
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02 FC:1800
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